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**Impact of COVID-19 lockdowns,
tobacco control mass media
campaigns and tax increases on
inbound Quitline calls in Victoria**

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Introduction

The aim of this brief report is to provide estimates of the relative impact on *inbound calls to the Victorian Quitline* of the 2020 lockdowns in Victoria due to the COVID-19 pandemic compared to tobacco tax increases and different tobacco control mass media campaigns broadcast in the state over the recent period, 2018 to 2020.

Method

Similar to prior research examining the effects of tobacco control mass media campaigns on inbound calls to the Victorian Quitline¹⁻³, the Quitline call data were negatively skewed and over-dispersed (mean=1,050; variance=53,517) and so negative binomial regression was used to analyse the data. The primary outcome variable was the monthly number of inbound calls to the Victorian Quitline. The main predictor variables were the first [lockdown](#) in Victoria (22nd March to 11th May 2020), the second [lockdown](#) (1st August to 28th October 2020), the motivational (negative emotion) mass media campaigns and supportive (positive emotion) mass media campaigns and tobacco tax increase periods (12.5% rise on 1 September each year), calculated as a proportion of each month with each activity/lockdown. For example, the combined *Sponge + Quitline Makes Quite a Difference* campaign aired from the 30th September through to the 10th November 2019 and so this campaign was coded as active for only 3.3% of September, 100% of October and 33.3% of November. In the case of the tax increases, the impact of these was coded as 50% in September, 100% in October and 50% in November. This pattern was in recognition that, as described in previous research, tax effects can have a slightly delayed impact post implementation as it takes time for all retailers to pass these increases on and the impact can last up to three months while those who continue to smoke become accustomed to the higher prices⁴⁻⁵.

The following tobacco control mass media campaigns aired in Victoria across 2018 to 2020:

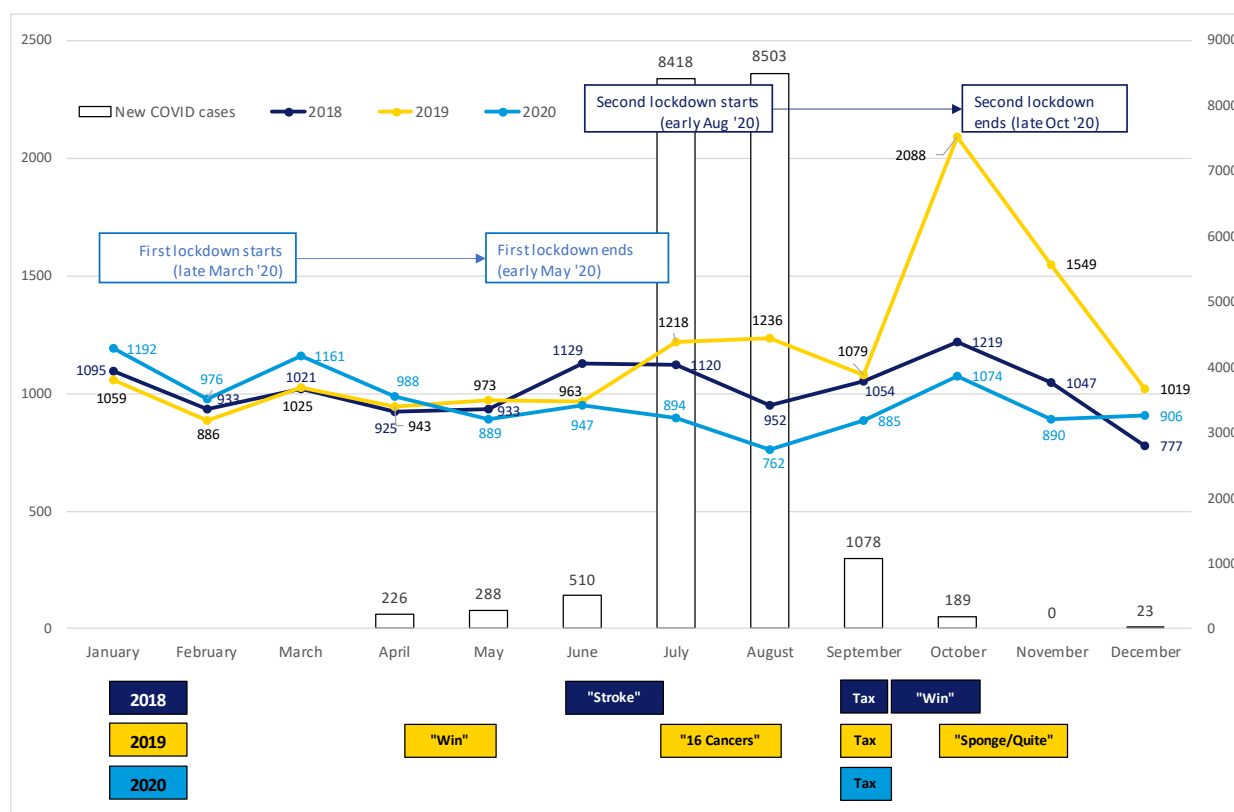
- 2018: *Stroke* campaign; *You Quit You Win* campaign
- 2019: *16 Cancers* campaign; *You Quit You Win* campaign; *Sponge + Quitline Makes Quite a Difference* campaign
- 2020: No mass media campaigns

The *Stroke*, *16 Cancers* and *Sponge* campaigns are all characteristic of being strong negative emotion campaigns, designed to motivate quitting. The *You Quit You Win* and *Quitline Makes Quite a Difference* campaigns, in contrast are characteristic of being positive emotion campaigns and are intended to support smokers in their quitting attempts by encouraging and building capacity to change.

Preliminary seasonality analyses indicated fewer inbound calls in Quarters 2 and 4 of each year. Accordingly, an indicator for seasonality was included in the models as a covariate. In addition, a continuous time variable (month-year from January 2018 to December 2020) was also included as a covariate to adjust for any secular changes in the propensity for people to call the Quitline. Preliminary analyses also indicated the number of new COVID-19 [cases](#) per month was associated strongly with the second lockdown, and so this variable was removed from the models to avoid multicollinearity, although these new case numbers are still presented in Figure 1 for illustrative purposes.

Results

Figure 1 presents, for each of 2018 to 2020, the number of inbound calls to the Quitline by month. These data are presented relative to the number of new COVID-19 cases in 2020 from April to December. Also presented in Figure 1 are the indicative dates when the tax increases were implemented in each of 2018 to 2020 (1 September), the two major lockdowns occurred in 2020, and the mass media campaigns were live in each of 2018 to 2020. Each mass media campaign took place over a period of six weeks (exact dates not shown).



Notes. “Win” = You Quit You Win campaign; “Stroke” = Stroke campaign; “16 Cancers” = 16 Cancers campaign; “Sponge” = Sponge campaign; “Quite” = Quitline Makes Quite a Difference campaign; Tax = Tax increases; Annotations indicative only of when interventions implemented/delivered.

Figure 1. Number of inbound calls to the Victorian Quitline by month, 2018 to 2020 relative to the number of new COVID-19 cases in Victoria, 2020 (Apr-Dec)

Analyses indicate that the first lockdown was not associated with changes in the Quitline inbound call rate, however the second lockdown was associated with more than a 20% decline in the call rate (Table 1). In contrast, the strong negative emotion campaigns (*Stroke* and *16 Cancers*) increased the call rate by over 25%, the positive emotion campaign (*You Quit You Win*) was not associated with any increased call rates either time it was broadcast, but the combined negative emotion plus positive campaign (*Sponge + Quitline Makes Quite a Difference*) increased call rates by over 60%. The tax increases were also associated with increasing the call rate by almost 28%.

Table 1. Results of negative binomial regression analyses: Victorian Quitline inbound call rate changes associated with each intervention under study

	Quitline inbound call rate changes associated with each intervention (95% confidence intervals)
<i>Stroke</i> campaign 2018	+25.1%* (+5.5% to +44.6%)
<i>You Quit You Win</i> campaign 2018	-5.2% (-25.8% to +15.4%)
<i>16 Cancers</i> campaign 2019	+28.1%** (+10.5% to +45.7%)
<i>You Quit You Win</i> campaign 2019	+6.9% (-20.0% to +33.8%)
<i>Sponge + Quitline Makes Quite a Difference</i> campaign 2019	+61.0%*** (+42.0% to +79.9%)
Lockdown #1 2020	+3.2% (-12.3% to +18.8%)
Lockdown #2 2020	-20.8%** (-34.5% to -7.1%)
Tax increases (12.5% rise) in September each year	+27.5%*** (+13.0% to 42.0%)
Time (month-year)	0.0% (-0.01% to +0.01%)
Seasonality	Quarter 1 (Jan – Mar) Reference category
	Quarter 2 (Apr – Jun) -11.4%* (-20.6% to -2.2%)
	Quarter 3 (Jul – Sep) -6.9% (-16.1% to +2.2%)
	Quarter 4 (Oct – Dec) -12.4%* (-22.7% to -2.2%)

Notes. Significant results shown in bold; *p<.05, **p<.01, ***p<.001

Discussion and Conclusions

The aim of this short report was to present the findings of an analysis which sought to explore the impact of COVID-19 lockdowns in 2020 on inbound calls to the Quitline relative to tax increases and tobacco control mass media campaigns over the period 2018 to 2020.

There has been much discussion on the impact of COVID-19 on health services, such as mental health services and cancer screening services⁶. Relatively less is known about the impact of COVID-19 on the Quitline.

Previous research has shown that calls to the Quitline are impacted by mass media campaigns and tax increases. It was important not to explore the role of COVID-19 on Quitline calls in isolation, but to consider its impact relative to other factors.

After controlling for mass media campaigns, tax increases and other key factors, the analyses indicated that, while the first lockdown earlier in 2020 was not associated with changes in the inbound Quitline call rate, *the second lockdown later in the year was associated with more than a 20% decline in the call rate.*

Additional, key findings from the analyses are as follows:

- The tax increases were associated with increasing the call rate by almost 28%;
- There is a relationship between the nature of the mass media campaign and the impact on inbound Quitline call rate in that,
 - The negative emotion campaigns (*Stroke, 16 Cancers*) were associated with increasing the call rate by 25 to 28%;
 - When the positive emotion campaign (*Quitline Makes Quite a Difference*) was aired in combination with a negative emotion campaign (*Sponge*), a substantial 61% increase in the inbound Quitline call rate was observed.

Taken together, these findings reinforce that multiple factors can influence calls to the Quitline. They also highlight the critical role that mass media campaigns play in motivating assisted quitting and that, in 2020, a year where there were no mass media campaigns on air, calls to the Quitline significantly declined. This was evident later in the year during the second, more stringent lockdown and after Victorians had been living with COVID-19 for several months.

There are some strengths and limitations to this work that should be acknowledged. The key strengths, which add rigour to the conclusions, are that we were able to control for a range of co-variables and thus more reliably consider the impact of COVID-19 on the rate of Quitline calls. We also used two years' worth of data (2018-2019) to compare with 2020. A limitation was that we were not able to add the absolute number of new COVID-19 cases in Victoria as a covariate due to collinearity with the second lockdown. However, this was addressed by including in the statistical models the two lockdown periods as discrete events.

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